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HOSPITAL BUILDING NOTE 29

PHARMACEUTICAL DEPARTMENT

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Hospital Building Note Number 29

Pharmaceutical Department

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I. Scope

1. This Building Note gives guidance on the design of pharmaceutical departments serving one or more hospitals. The advice given in this Note should be read in the light of the recommendations of the report of the Working Party on the Hospital Pharmaceutical Service (Noel Hall Report) (H.M.S.O.—32½p) and of H.M.(71) 70. The requirements of a department serving the larger number of beds mentioned in the Working Party report are not covered by this Note and additional provision will need to be made for work undertaken on behalf of other hospitals or hospital authorities on an area or sub-regional basis.

II. General considerations

2. Each major hospital will require a hospital pharmacy providing in-patient and out-patient services, an information service and storage for pharmaceutical products. The extent to which facilities for bulk preparation, including pre-packing and own process control, specialised quality control, or preparation of special formulations will be needed will depend on the arrangements which exist for such activities to be carried out on an inter-hospital, area, or sub-regional basis. Where a pharmacy is also supplying services for outlying hospitals, certain additional facilities may be needed.

3. It is not possible therefore to be precise about the requirements of a particular pharmacy and the needs of each hospital must be determined with regard to the existing and proposed organisation of pharmaceutical services in the group and region and any expansion proposed for the hospital itself. The Regional Pharmaceutical Advisory Committee, Group and Chief Pharmacists concerned should be consulted from the start of planning. This Note assumes that the pharmacy will be one which is required to provide for the manufacture of some sterile and non-sterile preparations in addition to the dispensing of prescriptions for both in-patients and out-patients, the supply of drugs to wards and departments, the custody of drugs and other pharmaceutical supplies, an information service, and some training. It does not deal specifically with cases where the scale of bulk production makes it convenient for this section of the pharmacy to be sited within an industrial zone away from the other sections of the pharmacy. Nor does it deal specifically with those pharmaceutical departments which are providing services for more than 1,200 acute beds (see paragraphs 10-12). The Building Note must therefore be regarded as a guide which will need adaptation where the pharmacy is providing services on an area or regional basis.

4. The department must be sited so that out-patients can easily visit it: on the other hand in-patient and out-patient dispensing should, if possible, be combined to save duplicating staff and stocks. It should also be conveniently placed for receiving and distributing goods. Preferably the whole department should be on the ground floor but this may not always be feasible.

5. The department receives a considerable quantity and variety of goods (e.g. drugs, solvents, dressings, gases and some equipment). These are delivered by messenger, post or road transport. Access to a central delivery area is desirable. Some of the goods handled are bulky.

6. A daily delivery to the wards and other departments is a common practice. This Note assumes the continued use of individual ward containers which may be boxes of a lightweight construction fitted with locks. For some preparations an exchange or replacement procedure may be operated.

7. Empty containers together with the order books are collected and delivered to the pharmacy department where requirements are dispensed. The containers are returned to the wards and departments at pre-determined times, co-ordinated with deliveries from the other supply departments.

8. Out-patients, or their escorts, should themselves attend the department and see a member of the staff.

Operational policies

9. Operational policies should ensure that the layout of the department provides for a convenient and economical flow of work and also for a degree of flexibility in the internal arrangement of sections. After inspection goods normally pass from the reception area to the stores and then to the manufacturing departments or to the dispensary. The major flow of work is illustrated in Figure 1; Figure 2 illustrates a suggested inter-relationship of rooms in greater detail.

Size of department

10. The principles covered by this Note apply to all types of pharmacy, but detailed advice is given for a small pharmacy serving about 300-550 acute beds, for a pharmacy undertaking a general range of work for up to 1,000 acute beds, and for a pharmacy serving 1,000-1,200 acute beds. It is recognised that some hospital pharmacies may need to be larger still (see paragraphs 2, 3 and 12).

11. Small hospitals may receive all pharmaceutical services from a larger centre or be served by a pharmacist visiting the hospital part-time. In such cases provision may only be needed for storage, and for office accommodation, with or without facilities for dispensing.

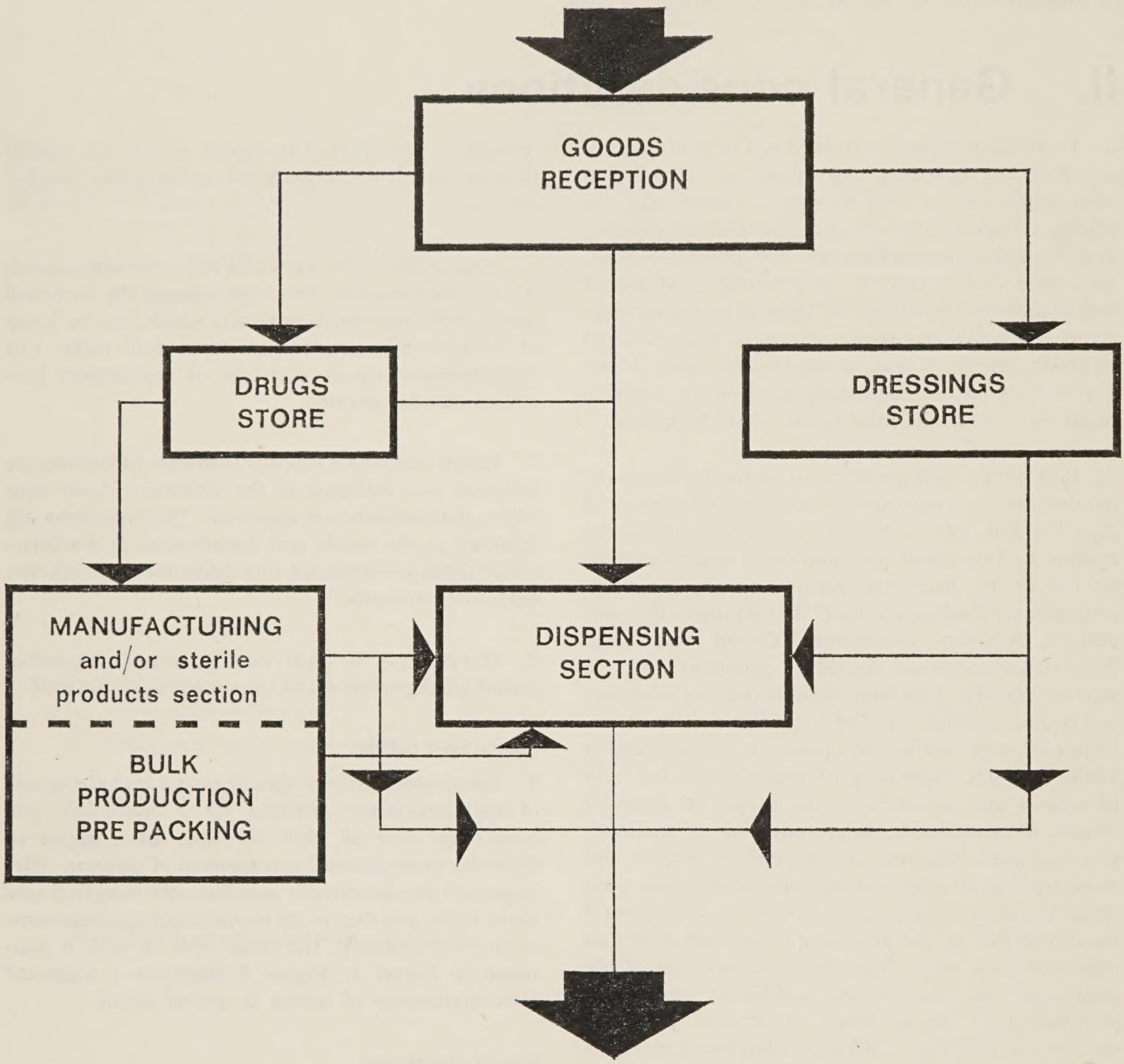

FIGURE 1 Major work-flow diagram.

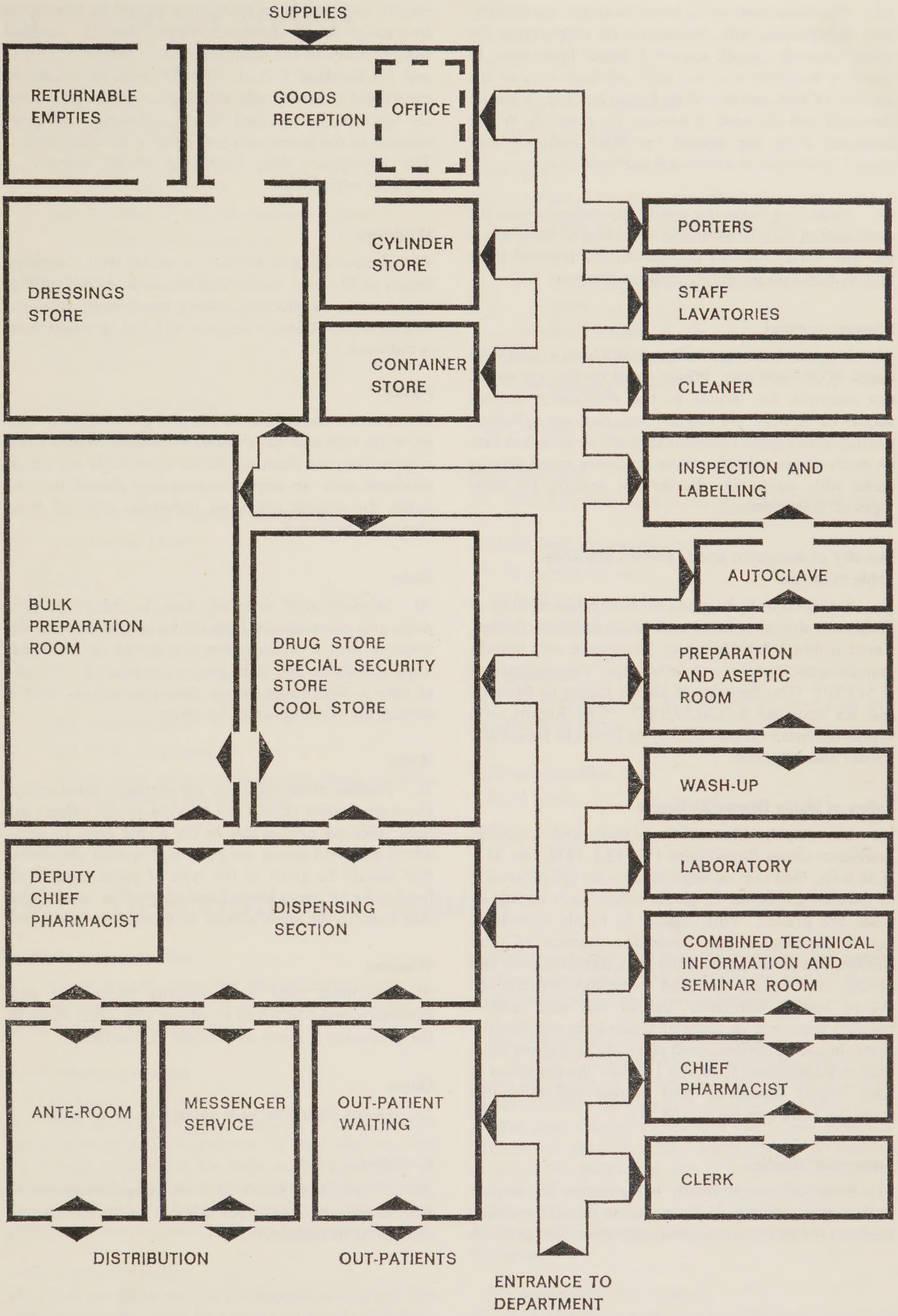

FIGURE 2 DIAGRAMMATIC layout showing inter-relationship of rooms.

NOTE: Some changes in layout will be required where the bulk production sections are sited within an industrial zone of the hospital.

12. The department of a larger hospital, particularly one undertaking bulk production or preparation for other hospitals, would require a larger floor area. In teaching hospitals also the ratio of floor area to the number of beds served will be higher because of special demands and the need to provide for research. Where increased areas are needed for these purposes they should be treated as additional accommodation.

13. Variations from the space recommendations for each section may be desirable according to local needs but any variations will depend on the type of work involved and on which sections are busiest.

Storage—general

14. In general, storage fittings should have a maximum depth of 305-460 mm. Where small bottles are stored (for example for tablets in the dispensing section) shelves of between 100 and 205 mm. deep are sufficient. Fittings with adjustable shelves should be provided with an easily cleaned finish; where necessary metal storage racks with adjustable shelves are suitable for most types of bulk storage.

Security of dangerous drugs, poisons and drugs liable to misuse

15. Provision must be made for the special security of dangerous drugs, poisons and drugs liable to misuse, stored within a department in accordance with current requirements, statutory or otherwise. The contents of H.M.(70)1 "The Security of Drugs Liable to Misuse" and for Scotland S.H.M.67/1967, "The Report of a Working Group on the Security of Drugs in Hospital", should also be noted.

Safety of highly flammable liquids

16. The Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972 (S.I. 1972, No. 917: H.M.S.O., 16p) impose requirements for the protection of persons employed in places where such liquids or gases are present. With regard to highly flammable liquids the Regulations cover the manner of their storage, the marking of storage accommodation and vessels and certain fire and explosion precautions. Where highly flammable liquids are held and/or handled anywhere in hospital pharmacies the Regulations should be applied, with particular attention being paid to Regulations 5, 10 and 14. Only the minimum of such liquids should be held outside the flammable materials store (see paragraph 51).

Emergency supplies

17. It should not normally be necessary for anyone except a pharmacist to have access outside working hours to the pharmacy or pharmacy store. Drugs which may be required in an emergency should be kept in an emergency store cupboard which can be reached without entry to the main pharmacy. (See H.M.(70) 1, and for Scotland S.H.M. 67/1967, both of which are mentioned in paragraph 15). Such a cupboard could, for instance, be situated in the ante-room or alternatively in the access corridor close to the department. The emergency drug cupboard should contain a lockable refrigerator.

Worktops

18. A clear width of 610 mm. is needed with a working height of 915 mm. Laminated plastic and teak finishes are generally satisfactory. Where benches are arranged in parallel, a minimum distance of 1.5 m. between them is required.

Floors

19. For the dispensing section and offices a heavy lino finish (in rolls and not as tiles) is suitable. Where areas require frequent cleaning, as for example in the sterile products area, an impervious surface should be provided. In storage areas an industrial type of floor should be provided.

Sinks

20. Stainless steel sinks are best. In the sterile products area elbow-action taps will be required and in the wash-up area a mixed outlet tap should be provided. Taps should be 560 mm. above the base of the sink, to take a Winchester bottle. One sink at low level is needed for washing large containers.

Walls

21. Painted plastered walls are normally satisfactory. Hard gloss paint should not be used as this reflects the light: tiles are undesirable in the sterile area. In areas where heat and steam are generated special consideration should be given to the type of paint used. Wall finishes in all areas should not give up or retain dust and walls in all areas should be completely washable.

Windows

22. Windows must have security locks. All precautions should be taken to ensure that illicit entry to the pharmacy is made as difficult as possible.

Doors

23. Doors should be wide enough to take a trolley.

Corridors

24. A minimum width of 2 m. is recommended to serve store rooms etc., but this can be reduced in the vicinity of the offices, etc.

III. List of rooms

A. Basic accommodation

25. This consists of the following:

(*a*) *Dispensing section*

(i) Dispensing area

(ii) Ante-room or bay

(iii) Out-patient waiting and service area

(iv) Messengers' service area

(*b*) *Manufacturing section*

(i) Bulk preparation room

(ii) Laboratory

(iii) Wash-up

(*c*) *Sterile products section*

(i) Wash-up

(ii) Preparation room

(iii) Autoclave area

(iv) Inspection, labelling and storage

(v) Aseptic room

(*d*) *Stores*

(i) Goods reception

(*a*) External goods entrance

(*b*) Storekeepers' office

(*c*) Goods receiving store

(*d*) Returnable empties store

(ii) Dressing store

(iii) Main drug store

(iv) Security store for dangerous drugs, poisons and drugs liable to misuse

(v) Container store

(vi) Flammable store

(vii) Cool store

(*e*) *Staff*

(i) Chief Pharmacist's office

(ii) Deputy Chief Pharmacist's office

(iii) Clerk's office

(iv) Combined technical information and seminar room

(v) Staff lavatories

(vi) Porters' room

(vii) Cleaners' room

(*f*) *Switchgear room*

Functional unit

26. The functional unit is the pharmacy department.

B. Additional accommodation

27. This may include:

(i) Staff room

(ii) Cylinder store

C. Circulation

28. To provide access as required to all rooms. See paragraph 24 above.

D. Communication

Plant room

IV. Description of rooms

A. Basic accommodation

29. The Appendix gives the recommended areas for the basic accommodation for departments for hospitals of between 300 and 1,200 beds.

(a) Dispensing section

(i) *Dispensing area*

30. This provides for the dispensing of prescriptions for in-patients and out-patients. It may also provide for certain requisitions for bulk supplies required in the wards and other departments. It should be designed to provide for working at bench-tops with sinks, arranged in parallel, with high and low level storage.

(ii) *Ante-room or bay*

31. This should be near to the dispensing area and the bulk preparation room. It is here that empty and filled containers awaiting delivery are held. One satisfactory method of storage is that of having two-tier divided sloping racks. The divisions are numbered or named for the various wards and departments, and the porter places the appropriate ward container in each.

(iii) *Out-patient waiting and service area*

32. A well-lit waiting room or bay, with comfortable chairs and tables, is required for out-patients. It should adjoin the dispensing area. A patients' service counter is better than the service windows which have generally been used in the past. This counter should be designed to screen the dispensing area from the waiting space and allow pharmacists to talk to patients in reasonable privacy, as well as making space provision for a clerk receptionist if prescription payments are to be made at this point.

(iv) *Messengers' service area*

33. A waiting area with a counter is needed at which messengers can collect special supplies for the wards. It should be near the dispensing area.

(*b*) ***Manufacturing section***

(i) *Bulk preparation room*

34. This is needed both for the bulk manufacture and packaging of non-sterile products and the re-packaging of purchased items in units suitable for distribution within the hospital and to out-patients. It should be close to the drugs store and dispensing area. The worktops should have sinks and low-level storage cupboards and drawers for apparatus and containers, etc. Equipment in this room may include mixers, steam-heated pans and a tablet counting machine.

(ii) *Laboratory*

35. A laboratory is required in larger hospitals for quality control and research. It should be planned to provide maximum bench space. The worktops should have a sink, low-level storage cupboards and drawers for apparatus and containers, etc. A fume cupboard with extractor fan is required with gas, electric and water points.

(iii) *Wash-up*

36. An area of the bulk preparation room might be equipped as a wash-up. It should be fitted with sinks, washing equipment and a drying cabinet and shelving for the storage of clean and returned containers.

(*c*) ***Sterile products section***

37. The rooms needed for the manufacture of sterile products should be grouped to provide a flow of work from the preparation room, through the autoclave area, to inspection, labelling and storage. Thus sterile and non-sterile products are kept separate. This complete unit would not normally be necessary for a hospital under 500 beds where group facilities for this work are available.

(i) *Wash-up*

38. This should adjoin the preparation room and should be mechanically ventilated. It should be fitted with sinks, washing equipment and a drying cabinet and shelving for the storage of clean and returned containers. It should be so arranged that returned containers are separated into those for aqueous liquids, oily preparations and dry products, and segregated from unused containers.

(ii) *Preparation room*

39. This is needed for the preparation, filtration and packing of solutions, water for topical use and for other purposes, etc. before sterilization. It should be mechanically ventilated. Benches, sinks and storage cupboards are needed. The detailing of equipment, finishes, etc. should be designed to minimise the collection of dust; surfaces should be easily cleanable.

(iii) *Autoclave area*

40. Here sterilization and distillation equipment is housed, preferably against an outside wall. Connections from the still to the sterile preparation room are required. Good ventilation is essential. To provide easy access for maintenance work to be carried out it is important that the sterilizers be installed in accordance with the recommendations stated in Hospital Technical Memorandum No. 10 (revised 1968).

(iv) *Inspection, labelling and storage*

41. This is required for the inspection, labelling and storage of products after sterilization. Bench space is needed to accommodate small items of equipment and large numbers of bottles containing sterile fluids, and adjustable shelving for storage.

(v) *Aseptic room*

42. This is required for making preparations by aseptic techniques (products which, because of their instability, cannot be subjected to a final heat sterilization process). The room will require an air-lock and should be mechanically ventilated. It can be conveniently sited with the preparation room and access obtained through the air-lock. Benches are needed.

(*d*) ***Stores***

(i) *Goods reception*

(a) *External goods entrance*

43. This Note assumes that facilities for the collection and delivery of goods to the hospital will be grouped, making the most economical use of common facilities such as a protected loading dock with tailboard access, and goods receiving area with road and turning space for vans. Because of the nature of goods supplied and sent out by this department, part of this loading area should be close to and used only by the pharmaceutical department.

(*b*) *Storekeepers' office*

44. This is required at the goods entrance. It should permit observation over the area and can be used for keeping records. A worktop and lavatory basin are needed.

(c) *Goods receiving stores*

45. Although the receiving stores of the hospital will normally be grouped, a separate store is needed for receiving and unpacking pharmaceutical supplies and for packing of goods being returned to suppliers or being sent to other hospitals. Goods going in and out of it should not pass through any other store. After reception and checking most supplies go to either the drug or dressings store. The receiving store should be fitted with benches. Special arrangements should be made for receipt of drugs liable to misuse which are delivered out of normal hours. (See H.M.(70) 1 and for Scotland S.H.M. 67/1967, both of which are referred to in paragraph 15.

(d) *Returnable empties store*

46. This is for keeping empty containers until they can be collected. It should have direct access to the reception area.

(ii) *Dressings store*

47. It may be convenient to store certain dressings in the pharmacy. If so, the store should be sited conveniently for goods deliveries and to enable distribution to wards and departments. Shelves should be arranged in bays. The areas given in the Appendix assume that storage will also be available elsewhere for other dressings.

(iii) *Main drug store*

48. This should be close to the manufacturing area and dispensing areas. A wide variety of drugs is stored here on narrow adjustable shelving arranged in bays. Floor space may be required for bulky powder containers and drums. This area should be divided so that commodities of the disinfectant type are isolated from other bulk drugs. The store is divided normally into wet and dry areas. In all sections provision for cleaning is necessary.

(iv) *Special security store*

49. Special security arrangements should be made for this store which is required for the storage of dangerous drugs, poisons and drugs liable to misuse (See H.M.(70) 1 and for Scotland S.H.M. 67/1967, both of which are mentioned in paragraph 15. Cupboards and racking should be provided and a small worktop is needed. This store may form part of the drug store but it should be arranged so that access is limited to authorised persons. It is often separated by a locked steel grille or cage. It should preferably not be situated on an outside wall, but if this is necessary it should not have windows.

(v) *Container store*

50. This is required for storing containers of various types and sizes (bottles, tubes, boxes, etc.) used in the department.

(vi) *Flammable store* (See Hospital Technical Memorandum No. 16 (Revised 1969) —Fire Precautions, Hospital Building Note No. 34—Works Department and paragraph 16 of this Note).

51. A store for flammable materials is needed. This should be in an isolated building away from the pharmacy department or any other hospital department. The recommended area may have to be increased if the pharmacy is responsible for holding stocks of flammable materials for other departments.

(vii) *Cool store*

52. This is required for the cool storage of certain drugs. It should be remote from any source of heat and preferably on the north side of the building. Refrigerated storage will be needed for the reserve stocks of biological and certain other drugs.

(e) Staff

(i) *Chief Pharmacist's office*

53. This should be readily accessible to members of the hospital staff who wish to consult the Chief Pharmacist.

(ii) *Deputy Chief Pharmacist's office*

54. An office of 11 m.^{2} should be provided in the larger hospitals. It should be adjacent to the dispensing and main processing areas.

(iii) *Clerk's office*

55. This should be close to the Chief Pharmacist's office and could also serve as an enquiry room. Space for filing cabinets, records, etc. is needed.

(iv) *Combined technical information and seminar room*

56. The combined technical information office and seminar room should be immediately adjacent to the Chief Pharmacist's office as shown in Figure 2, for his own use for a seminar room and to enable him to discuss problems with those seeking information. It should also be accessible in the 'silent' hours without the need to enter rooms which are otherwise locked.

(v) *Staff lavatories*

57. Unless there are conveniently placed lavatories outside the department they must be provided within it. One w.c. and lavatory basin to every eight staff is suggested, but there must be separate lavatories for men and women.

(vi) *Porters' room*

58. This is needed for the porters attached to the pharmacy.

(vii) *Cleaners' room*

59. This should be equipped with a bucket sink with hot and cold water, drainer, space for mechanical cleaning equipment, cleaning utensils, etc.

(f) Switchgear room

60. A switchgear room to house the main isolator and distribution switch/fuse gear should be located centrally to reduce the length of circuit wiring. The recommended size is 2.5 m. × 1.5 m. deep (minimum) to allow a clear passage in front of the switchgear; the dimensions will, however, depend on the quantity and type of equipment to be installed. The room should be kept dry and well-ventilated and the door should be lockable and open outwards. Where it is practicable and economic the switchgear room may be combined with the plant room, but due care should be taken to ensure that the switchgear is mounted clear of all pipes carrying liquids, in case of leakages.

B. Additional accommodation

(i) *Staff room*

61. Unless there is a conveniently placed staff room elsewhere a room will be needed to provide about 1 m.^{2} per person, with a minimum area of 9.5 m.^{2}.

(ii) *Cylinder store*

62. Even where piped supplies of the frequently used gases are provided, a cylinder store will be necessary for storing the gases that are still usually supplied in cylinders. This store must be accessible outside normal pharmacy hours and need not be adjacent to the main pharmaceutical department. It is often convenient for it to be close to the main goods unloading entrance. (See Hospital Technical Memorandum No. 22—Piped Medical Gases, Medical Compressed Air and Medical Vacuum Installations).

C. Circulation

63. Corridors should be well lit and ventilated and the minimum width of 2 m. is recommended to serve stores, etc. but this can be reduced in the vicinity of the offices.

D. Communications

Plant rooms

64. (a) Plant rooms to house mechanical ventilation and other normal engineering plant for the pharmaceutical department only, as well as other central services for the whole hospital, will be required. These plant rooms will comprise the following:

(*a*) *Ventilation and other normal engineering plant for the pharmaceutical department* (*see* (*b*) *and* (*d*) *below*). Mechanical ventilation plant, space heating and hot water calorifiers, pumps, feed and expansion and cold water tanks, control valves, etc.

Central services plant (*see* (*c*) *below*)

(i) The standby manifold for central liquid oxygen installations, or the main manifold installation for oxygen, the nitrous oxide manifold installation and any other medical gas manifold installation;

(ii) the central medical compressed air plant.

(iii) the central medical vacuum pumping plant.

The information which follows about these plant rooms therefore, gives guidance on the requirements for the whole hospital as well as the particular needs of the pharmaceutical department.

(*b*) *Plant rooms for mechanical ventilation plant, space heating and hot water calorifiers, pumps, feed and expansion and cold water tanks, control valves, etc. for the pharmaceutical department.*

A plant room to house the mechanical ventilation plant, space heating and hot water exchangers/calorifiers, pumps, feed and expansion tanks, cold water header tanks, control valves and panels, etc. will be required. The construction should be designed to keep the emission of noise and vibration down to acceptable limits. (See Hospital Design Note No. 4—Noise Control). Natural ventilation of the room should normally be satisfactory but mechanical ventilation may be needed if the plant room is located at ground or basement level. (See Hospital Technical Memorandum No. 23—Access and Accommodation for Engineering Services). The plant room should, preferably, be located within the periphery of the department and be so sited that it does not interfere with the normal working of the department. In a multi-storey building it might not be possible to locate the plant room with the department; it may therefore be sited on the roof or elsewhere in the building. The plant room may also be shared with other departments where it can be conveniently and economically arranged (e.g. within a whole hospital complex). If sharing is possible then an overall reduction in plant room area may result. In some cases (e.g. where the plant room is located at ground floor or basement level for space heating/hot water calorifiers and pumps) it may be possible and convenient to combine the switchgear room with the plant room.

(*c*) *Plant rooms for central oxygen, vacuum, nitrous oxide manifold installations and compressed air.*

Hospital Technical Memorandum No. 22—Piped Medical Gases, Medical Compressed Air and Medical Vacuum Installations is applicable and should be consulted.

Liquid oxygen plant offers considerable advantages over a gas cylinder manifold installation and should be adopted whenever it is shown to be economical. It will usually be found that it is economical for a hospital having more than about 200 beds (acute). It will be required in all cases where hyperbaric oxygen therapy is undertaken (e.g. radiotherapy departments). Central oxygen cylinder manifold installations will normally be required in hospitals where the use of a liquid oxygen supply cannot be justified. A central nitrous-oxide cylinder manifold installation should be provided, whilst a central manifold installation may be required in certain hospitals for other medical gases, e.g. half and half mixtures of nitrous-oxide and oxygen.

Central medical vacuum pumping plant will be required in most hospitals and central medical compressed air plant, including a standby compressed air cylinder manifold installation, will be required in many hospitals. These plants will serve the whole hospital complex excluding the pathology laboratory, any other laboratories and the workshops. The central vacuum plant will give a supply for *medical* purposes in the out-patient department—dental department but will not supply the need for *dental* vacuum. (Dental vacuum requires a low-level, high-volume vacuum supply which is obtained from an independent source). The central compressed air plant should not supply air for any purely engineering/industrial purpose, e.g. for the operation of pneumatic controls and door opening mechanisms or for use in workshops or laundries. The medical central compressed air installation will, however, supply air for the operation of the dental equipment. The air supplied to the dental department will not be used for the mechanical adjustment of the dental chair itself.

(*d*) *Pharmaceutical department*

Suggested areas for mechanical ventilation and normal engineering plant for the pharmaceutical department only are as follows:

(i) 300 to 550 beds — 10 m.²
(ii) Up to 1,000 beds — 14 m.²
(iii) Up to 1,200 beds — 23 m.²

(*e*) *Whole hospital complex*

The following table gives the suggested areas for plant rooms for central medical gases.

Plant rooms	*Number of acute beds served*				
	Up to 300	301–600	601–800	801–1200	1200–2000
	Area m.²	*Area* m.²	*Area* m.²	*Area* m.²	*Area* m.²
"ENGINEERING" PLANT	7	9.5	14	23	28
OXYGEN Oxygen plant	17.5 (a) (b)	17.5 (a)	17.5 (a)	17.5 (a)	17.5 (a)
Manifold room for: nitrous oxide or nitrous oxide/oxygen mixture. (c)	3.5 (d)	3.5 (d)	4.5 (d)	5.5 (d)	7 (d)
OR Combined cylinder store and manifold room for nitrous oxide or nitrous oxide/oxygen mixture. (c)	6.5 (d)	6.5 (d)	9.5 (d)	12 (d)	17 (d)
COMPRESSED AIR— *comprising:* (i) Compressed air plant *and* (ii) Compressed air manifold room	18.5 3.5	18.5 3.5	28 3.5	37 3.5	2 × 28 2 × 3.5
VACUUM Vacuum plant	18.5	18.5	28	46.5	2 × 28
Circulation/access for above	5	5	5	5	5

NOTES:

(*a*) An outdoor area of approximately 14 m.² will normally be required for a bulk liquid oxygen plant. The area should have good road access, a concrete apron of 2.5 m. minimum width and it should preferably be sited not less than 6 m. from any building. A weatherproof enclosure of 3.5 m.² area or the equivalent space in a manifold room will be required for the 2 × 10 standby manifold. These together contribute the total of 17.5 m.².

(*b*) For some smaller hospitals a manifold supply of oxygen may be adequate. In such cases the size of the manifold room or combined cylinder store and manifold room should be calculated by reference to Hospital Technical Memorandum No. 22—Piped Medical Gases, Medical Compressed Air and Medical Vacuum, with a reduction as indicated in (*d*) below when appropriate.

(*c*) Piped nitrous oxide/oxygen mixture installations may now be specially approved.

(*d*) These areas can be reduced by the following amounts when two manifold rooms can be combined into one.

Up to 300 beds and 301–600 beds — 1 m.²
601–800 beds — 1.5 m.²
801–2000 beds — 2 m.²

V. Engineering services

65. The engineering services should be designed and installed to ensure the minimum interruption of services and disturbance to the working of the department while repairs and maintenance are being carried out.

66. Engineering services will normally be concealed but there must be reasonable accessibility to the services for maintenance and replacement.

67. The position of lighting fittings and service outlets must be related to that of the furniture (benches, etc.), fittings and equipment and must be decided at an early stage of planning.

68. Facilities should be provided for the easy installation of meters should they at any time be required.

69. Fire protection of the building may influence the design of the engineering services, especially ventilation schemes. (See also paragraph 16). Due regard should be given to these requirements in the early stages of design and the Chief Officer of the local Fire Brigade should be consulted as early as possible (See Hospital Design Note No. 2, Protection against Fire).

Mechanical services

Heating

70. Wall space is usually taken up by benches and cupboards, thus radiators are often difficult to accommodate. Placed behind benches they lose their effectiveness and are inaccessible for maintenance and cleaning; cupboards alongside may become over-heated. Grilles built into benches over radiators are not advisable; bench space is lost and they are easily soiled by dirt and spilt liquids.

71. For these reasons heating by means of ceiling panels is normally to be preferred, and they should conform to the recommendations of the Medical Research Council's Environmental Research Unit. These may be found in the "Guide to Current Practice" of the Institution of Heating and Ventilating Engineers.

72. Space heating requirements should be calculated on the following recommended design temperatures and ventilation rates based on an outside air temperature of –1 °C.

Accommodation	*Temperature °C*	*Air changes per hour*
Dispensing area, ante-room, out-patient waiting and service areas, bulk preparation room, laboratory, inspection and labelling room, offices, combined technical information and seminar room, staff room, porters' room. ...	18	2
Lavatories, corridors and cleaners' room	16	2
Goods receiving store	18	2
All other stores except flammable and cool stores	10	½
Autoclave area and wash-up ...	16	see under ventilation
Preparation and aseptic room ...	18	see paragraphs 123 to 126
Cool store	—	see paragraphs 127 to 130
Flammable store	—	2

73. Heating should be provided at the goods entrance to offset any loss of heat when goods are being loaded or unloaded.

Ventilation

74. The department will, in the main, usually be designed for natural ventilation and particular attention should be given to the type of windows selected, to allow air infiltration without draught. Top opening windows at high level should be provided with a minimum opening notch or other adjustment to give control of the incoming air. In ceiling-heated areas the incoming air should not be directed at the ceiling.

75. Internal rooms should be mechanically ventilated to suit their individual requirements. Internal lavatories should have mechanical extract to give 10 air changes per hour.

76. Fume cupboards should have built-in exhaust fans which should discharge to the open air away from all windows or ventilation openings.

77. In the autoclave and wash-up areas mechanical extract ventilation, extracting through hoods or aproned areas over steam or heat-emitting equipment, at a rate of not more than 15 air changes per hour should be adequate to minimise the nuisance from steam and heat. Where it may be necessary to draw fresh air from outside to balance the extract this should be filtered and it will be desirable in winter, to heat this incoming air to 13°/16°C to prevent staff being exposed to cold draughts. Hoods and aprons should be designed so that they are easy to clean.

78. The area in the drug store in which disinfectants are stored may also need mechanical extract.

79. For the ventilation of the preparation and aseptic rooms see paragraph 123 to 126.

80. Filters of 95 per cent efficiency down to 5 micron will give satisfactory filtration of incoming air but additional coarse pre-filters are necessary in districts where the air is dirty.

81. External discharges should be carried clear of the building and protected against back pressure from the wind. Grilles should be installed, preferably in corridor walls, to provide an air inlet for rooms that rely solely on mechanical extract for their ventilation.

Hot, cold and drinking water

82. These should normally be connected to the hospital's main services. The water supply for dispensing purposes and to the stills should be taken direct from the supply undertakings' mains. A drinking water tap, also from the supply undertakings' mains, will be required in the cloakroom or sanitary accommodation and in the dispensing area for filling medicine bottles.

83. In the dispensing area, taps should be provided with bottle filling nozzles or hose connections. To take the tallest bottles the tap outlet should be not less than 550 mm. above the bottom of the sinks in the dispensary. Likewise, in the manufacturing area the height of the tap above the sink should be such that the tallest flask and buckets, etc. can be easily accommodated. The taps in these areas should be placed so that the nozzles are over the middles of the sinks.

84. Elbow-action taps should normally be provided in the aseptic room; mixed outlet taps may in some cases be required. Elsewhere pillar taps are suitable, but spray-mixing taps have advantages for lavatory basins *en suite* with w.c.'s in that water consumption is reduced and the outlet temperature can be controlled.

85. Cooling water from the stills, normally at a temperature of 82/88°C, can be used for bottle washing. A tank, suitably lagged, having a capacity of 455 to 680 litres should provide a sufficient reservoir of hot water for this purpose.

Purified and distilled water

86. (*a*) Purified water is prepared from suitable potable water by distillation or by treatment with ion-exchange materials. The latter process may be uneconomic when the water is hard. The central (tank) storage with a piped distribution system of distilled water is not recommended for general use; the objections being that contamination may occur, and, since the distilled water will be readily available, it may be used for purposes other than those for which it is legitimately required. Distilled or de-ionised water may however be stored for rinsing bottles; a storage capacity of the order of 90 litres for 300/550 beds to 275 litres for up to 1,200 beds should meet this requirement. (See paragraph 133). Only freshly distilled water should be used for rinsing containers for injections.

(*b*) Water for injections is distilled from suitable potable water and immediately sterilized.

87. The production of water by condensing steam from the hospital's main steam supply has the disadvantage that chemicals used for water feed treatment, inhibitors and possibly oil may be difficult to remove and be carried over, contaminating the water distilled.

Steam supply

88. The hospital's steam supply provides an economical source of heat for stills, sterilizers, boiling pans, etc. and a steam service should therefore be provided in this department. A mains pressure of 3.5 to 4.1 bars will cover all requirements and reducing valves can be used to suit the apparatus; steam pipes and traps being sized to allow quick heating up.

Gas (fuel) supply

89. A gas supply should be available in most areas of the department, multiple provision of gas points will be required in the dispensing area, bulk preparation room, laboratory, sterile preparation room and aseptic room.

Specialised piped services

90. The demand for specialised piped services (suction, compressed air, etc.) can normally be met by the provision of local supply units, although, particularly in the case of suction, there may be some advantage in connection to a mains service where this is readily available from an installation supplying the pathology department. No piped supply to the pharmacy department should be taken from an installation supplying wards, operating theatres, etc. because of the risk of contamination.

Fire alarm system and fire fighting equipment

91. The hospital fire alarm system should cover the pharmacy department and an automatic fire detection system should be provided in rooms in which materials and fluids constituting a special fire risk are kept. Information on fire alarms and extinguishers is given in the Hospital Technical Memorandum No. 16 (revised 1969)—Fire Precautions. Approval of the fire fighting installation proposed should be sought from the local fire authority who should be consulted in the early planning stages.

Service lift and lifting tackle

92. Where the pharmacy department is planned on more than one floor, a 255 Kg., 0.5 m. per second service lift for the carrying of unaccompanied goods will be required. The landing shutters should open to the full width and height of the lift car to provide a clear unrestricted access for the handling of the goods; car gates or doors are not usually required.

93. The service lift should be electrically powered with the stopping positions at floor level to facilitate the handling of bulky or heavy loads and automatically self-levelling to bring the lift smoothly to stop within $\pm$ 6.5 mm. of the landing under all conditions of load. Floor selector buttons with audible or visual warning of lift arrival should be provided at each landing.

94. The lift should conform with the appropriate British Standards and safety requirements and should operate silently and without vibration under all conditions of load. Machinery and control equipment should be insulated from the structure to reduce to a minimum the transmission of noise and vibration.

95. Lifting tackle may be required at the goods entrance for loading and unloading gas cylinders, etc. (See Factories Acts for safe working loads and safety requirements).

Pneumatic tube system

96. The evidence collected from the studies carried out by the Department (Hospital Technical Memorandum No. 9—Pneumatic Tube Communication Systems) points to the conclusion that in National Health Service hospitals comprehensive pneumatic tube systems are of doubtful value, but it also indicates that a point-to-point communication by a tube system may be justified in special circumstances.

97. As far as the pharmacy department is concerned a comprehensive or a point-to-point pneumatic tube system is not likely to be of much benefit to the functioning of the department. It is unlikely that more than a small proportion of the total volume of goods could be transported in this way and items would need to be carefully packed to insure against breakage. Moreover, in the case of scheduled poisons and drugs, special security arrangements would be needed and even then the risk would remain that containers may occasionally be wrongly directed or fail to reach their intended destination.

Electrical services

General

98. The electrical installation will consist of general and special lighting, socket outlets and the wiring and equipment required for heating, ventilation and other installations such as telephones, clocks, etc.

Supply and distribution (See Hospital Technical Memorandum No. 7 — Electrical Service: Supply and Distribution)

99. The electrical supply will normally be provided by sub-main circuits from the main intake and distribution centre. Local distribution boards should be easily reached from a standing position, housed in ventilated spaces, preferably accessible from corridors and fitted with locks where necessary. H.R.C. fuses are recommended and in addition to the provision for spare ways and fuses, space should be allowed for future additional units.

100. Where light machinery is provided a single-phase supply should normally be adequate; for any heavy machines a three-phase supply will be necessary.

Wiring

101. Local circuit wiring should normally be run in conduit or trunking, and sub-main cables supported on brackets or cable trays.

102. External wiring should comprise either P.V.C. cables in galvanised screwed conduit or M.I.M.S. cables.

Artificial lighting

103. Lighting should follow standard modern practice. Specialised lighting will not normally be required, but lighting fittings in waiting areas should be selected to give a pleasing effect.

104. Lighting fittings should be selected and positioned to minimise glare and to facilitate cleaning and maintenance.

105. Tungsten lighting is generally suitable for areas where lighting is required intermittently. Fluorescent lighting will be more economic where lighting having colour rendering properties recommended for clinical application is required for longer periods. Fluorescent tubes will be required in laboratories. Where fluorescent lighting is used near rotating machinery attention should be given to the elimination of stroboscopic effect, e.g. by the use of twin tube fittings.

106. Fluorescent lighting may not be suitable for examining solutions; a special unit, or tungsten lighting against a suitable background, may be preferable.

107. The recommended average illumination values at 915 mm. above floor level for the various rooms in the department are as follows:

Accommodation	*Average illumination level Lux*
Dispensing area, laboratory, preparation room, inspection and labelling room and aseptic room	300
Bulk preparation room	200
Ante-room, autoclave area, wash-up, offices, combined technical information and seminar room	150
Out-patient waiting and service area, messengers' service area, staff room, porters' room, switchgear room and plant room	100
Goods receiving store	100*
All other stores	70*
Corridors and goods entrance	70*†
Cleaners' room and lavatories	50*

* Standard given is required at floor level.
† This figure may be increased where adjacent intensities are high.

Socket outlets

108. Sufficient 13A universal type switched, shuttered socket outlets connected to ring or spur circuits should be provided to allow each portable appliance likely to be used at the same time to be supplied from a separate outlet.

109. In the dispensing and sterile products areas, and to a lesser degree in the manufacturing area, a liberal provision of socket outlets is needed. To give flexibility and allow for the re-positioning and addition of outlets with minimum disturbance, a socket outlet trunking system can be advantageous.

110. Fixed equipment rated up to 13A should be permanently connected to 13A fused spur boxes. Equipment rated in excess of 13A should be fixed and permanently connected to separate final sub-circuits and be independently switched.

111. Indicating lights to show when the electrical supply is switched on should normally be incorporated in electro-medical apparatus and non-luminous heating appliances. (See Hospital Technical Memorandum No.

8 (revised 1969)—Safety Code for Electro-Medical Apparatus). Where this is not so, a green or alternatively a plain neon lamp behind a clear lens may be required in the plug-top.

112. The following socket outlet distribution is suggested:

Dispensing, sterile products and manufacturing areas	Trunking system One twin outlet for each 2 m. of benching
Laboratory	Four twin outlets and one twin outlet in fume cupboard
Offices, combined technical information and seminar room, and goods receiving store	One twin outlet
Porters' room	One single outlet
Plant rooms	One twin outlet

113. Additional socket outlets should be provided as necessary throughout the department, including corridors, to allow for the convenient use of domestic cleaning appliances having a flexible lead assumed to be 9 m. long.

Emergency electrical supplies

114. Guidance on the provision of emergency electrical supplies is given in Hospital Technical Memorandum No. 11—Emergency Electrical Services.

115. Standby lighting grade (a) equal or nearly equal to that provided by the normal lighting should be provided in the dispensing area.

116. Standby lighting grade (b) to about half normal standard should be provided in the general working areas to enable essential activities to be continued in emergencies.

117. Safety lighting will be required in circulation areas, waiting areas, at exits, etc. to assist safe, unobstructed means of escape and to enable essential movements to be carried on in emergencies.

118. In areas where standby lighting is provided, a proportion of the socket outlets should also be on essential circuits.

119. Electrical services, including alarms, automatic controls essential for the safe operation of sterilizers, stills, piped medical gases, etc. and the security of drug stores should be supplied from an essential circuit.

Telephones

120. There must be good communications between the sections of the pharmacy and sufficient provision to enable telephone enquiries from medical and nursing staff to be handled promptly. Telephones from the hospital system should be provided in the dispensing area and in the Deputy Chief Pharmacist's office, porters' room, laboratory, store-keeper's office and service counter. Inter-connected instruments, e.g. a GPO "plan 7", are required between the Chief Pharmacist's office and the clerk's office. Intercommunicating telephones may be required between the aseptic room, preparation room, manufacturing area and combined technical information and seminar room.

Electric clocks

121. Electric clocks will be required in the dispensing area, preparation room, autoclave room and porters' room. Where there is a central clock system this should be extended. In other instances synchronous mains-operated clocks should be provided.

Staff location system

122. The hospital staff location system should be extended to a suitable position in the department.

Special rooms

Preparation and aseptic rooms

123. It is now recognised that it is impossible to maintain an area free from bacterial contamination where staff are moving about. It is therefore recommended that in the aseptic room a cabinet or screen is provided in which the actual aseptic manipulations are carried out.

124. All windows in the preparation and aseptic rooms should be sealed and plenum ventilation provided. In winter it should supply a minimum of five air changes per hour of fresh, filtered and warmed air to provide a room temperature of 18°C. The volume and pressure of the air supply to these rooms should be sufficient to maintain a slightly pressurised condition in them. Air from the aseptic room should be exhausted into the preparation room through an air lock, and the air from the preparation room mainly exhausted through the autoclave room; the air should be exhausted through grilles with a lightweight flap valve.

125. The cabinet or screen may need to be continually flushed during working hours, by air drawn from the room suitably filtered to a sterile condition, and exhausted back into the room.

126. All electrical fittings should be flush-mounted and lighting fittings fully recessed and easily removable for cleaning and lamp replacement.

Cool store

127. The cool store should be situated in a position in the department having a northerly aspect and, in the case of a single-storey building, the roof should be designed to reduce solar heat gain.

128. The room should be windowless and of sufficiently massive construction to dampen the effect of

diurnal temperature changes and insulated from any heat gains from adjoining rooms, etc. Means for natural ventilation should be provided.

129. All engineering services, except lighting, are to be excluded from the room and the running of hot pipes in ducts or trenches beneath the floor, in the ceiling or in adjacent rooms should be avoided.

130. Mechanical cooling may be required in order to maintain the temperature of the cool store room at 15°C.

Equipment

General

131. Stills, sterilizers, ovens, etc. should, where possible, be sited on an external wall and efficiently insulated (lagged) to minimise the heat gains to the surrounding area.

132. Non-portable equipment and machinery should be firmly fixed and, as required, should be separately and permanently connected to the services and capable of being independently isolated. Machinery should preferably be fitted with anti-vibration mountings and fixed either to the floor or specially prepared bases.

Stills

133. Stills will usually be steam heated. The distilled water will be required for:

(*a*) preparation of solutions;

(*b*) topical use in operating theatres;

(*c*) rinsing containers for injections.

For (*a*) the amount required will be about 1 litre per acute bed per week. For (*b*) the amount required by a group of theatres carrying out the normal spectrum of operations is not likely to exceed 65 litres per theatre per week in a busy week. For a small group of theatres engaged mainly on operations demanding large quantities of topical water (e.g. genito-urinary operations) the usage is unlikely to exceed 200 litres per theatre per week in a busy week. Usage in an average week is likely to be approximately 30 per cent below these figures. Ordinary mains water, softened if necessary, may be sterilized for topical use, provided no deposit is formed in the flasks during sterilization. De-ionized water may also be used for this purpose. For (*c*) the amount required will be about 0.5 litres per acute bed per week.

134. Where distilled water is to be used in preference to demineralised water for bottle rinsing this can be generated during the night and stored for use next day. Wherever possible arrangements should be made so that the cooling water from the stills can be utilised for bottle washing, but see paragraph 86(*a*) for the rinsing of containers for injections.

135. Although the stills should be in the autoclave room the distillate should be collected in the preparation room of the sterile products area.

136. The waste system and drains disposing of the cooling from the stills should be adequately sized and of materials capable of withstanding temperatures of up to 88°C.

**Sterilizers*

137. Sterilizers should be manufactured to B.S.3970, part 2. Rapid cooling and air ballasting devices are available as optional extras for use with these sterilizers. Reference should be made to Hospital Technical Memorandum No. 10 (revised 1968)—Pressure Steam Sterilizers. A rapid cooling device would normally be required. Some users require provision for adjustment of stage times and sterilizing temperatures by an authorised person. Such requirements must be clearly stated when the plant is ordered.

138. If fluids are to be sterilized in the pharmacy the size of the sterilizers should be related to the loading as indicated in paragraph 133. It is advisable to provide two small sterilizers rather than one large one. Each sterilizer should be capable of dealing with the average load. Typically in a pharmacy serving up to 1,000 beds a total of two sterilizers each of 400 litres capacity would be adequate and in most cases they would be large enough for a hospital of up to 1,200 beds. Greater sterilizing capacity may, exceptionally, be needed when an unusually large number of procedures are undertaken involving the use of large quantities of sterile fluids. An automatic hot air sterilizer of approximately 85 litres capacity and a bench sterilizer of approximately 42 litres capacity will also be required.

Refrigerators

139. A pharmacy serving the lower bed range should be provided with refrigerators as follows: store 570 litres; dispensing area 230 litres; emergency drug cupboard 28 litres. The capacities of the refrigerators for the store and dispensing area may need to be increased for pharmacies serving higher bed ranges. All refrigerators should be lockable.

Bottle-washing

140. A bottle-washing machine will be required for the larger categories of hospital. It should be capable of handling a variety of sizes of bottles and of removing all solid matter adhering to their surfaces. The washing cycle should include pre-rinse, detergent wash, hot water rinse and distilled (or demineralised) water rinse phases; the hot and distilled water rinse of the latter two phases of the cycle must not be re-circulated but run direct to waste. These machines should preferably be permanently fixed and plumbed.

141. A drying cabinet with capacities of the order of 0.5 $m.^3$ for 300/550 beds, 0.7 $m.^3$ for up to 1,000 beds and 0.85 $m.^3$ for up to 1,200 beds will be required. It should be electrically heated and thermostatically controlled to maintain a selected temperature up to 93°C. The cabinet should also be fitted with ventilators and a drip tray.

* Some hot air sterilizers and bench sterilizers are available as CENTRAL SUPPLIES items.

Water filter pumps

142. Water filter pumps should not be used. They are extravagant in their use of water and are readily liable to become contaminated and a potential source of infection.

Drug cupboards

143. The special security store (see paragraphs 15 and 49) should be fitted with an approved type of burglar alarm, as should be the emergency store (paragraph 17). Advice on the fitting of an alarm system was given in the Department's letter of 29 August, 1969, referred to in H.M.(70) 1 (for Scotland see S.H.M. 67/1967 and the Scottish Home and Health Department's letter of 5 September, 1969). The alarm system may also be extended to cover the drug cupboards in the dispensing area, and bulk preparation room, as well as in the main drug store. It may also be necessary to extend the alarm system to the emergency drug cupboards. This installation would normally be provided by a specialist subcontractor. However, attention is drawn to paragraph 15 on the security of dangerous drugs and poisons.

VI. Cost and other relevant information

Cost control

144. For cost control purposes the lump sum Cost Guide figures for the various functional units shown in the Departmental Cost and Area Guide (Hospital Building Procedure Note No. 6: part of CAPRICODE), will be applicable. These figures include basic accommodation together with circulation and an allowance in respect of additional accommodation and/or additional engineering.

145. Building Notes recommend the standards of accommodation and services for hospital departments which the Department of Health and Social Security consider it reasonable to provide. Hospital Boards are at liberty to depart from the design recommendations given in Building Notes provided they are satisfied that the standards of accommodation and services they adopt are adequate. The Departmental Cost Allowance however is to be regarded as the maximum sum available for a department requiring the basic services specified in this Note. Where (see e.g. paragraphs 2, 3 and 12), the hospital pharmacy provides additional services in an area or regional basis and additional provision has to be made for this, the cost allowance may be varied accordingly. Hospital Boards are encouraged to produce designs for the provision of appropriate accommodation and services at a cost less than the Departmental Cost Allowance.

146. The pharmaceutical department Cost Guide figures provide for the basic and additional accommodation detailed in paragraphs 25, 27 and 28 above and for the engineering services detailed in paragraph 150 below.

Apportionment of costs

147. An assessment of the notional cost apportionment between the building and engineering service elements should be made at Procedural Stage C.1 (Provisional Cost Plan—Hospital Building Procedure Note No. 1 : part of CAPRICODE).

Circulation space

148. For the purposes of preliminary planning the area occupied by internal circulation space and internal walls and partitions represents, on average, an addition of 30% of the net floor area of basic and additional accommodation.

Plant room

149. The plant room areas shown in paragraph 64 have been calculated for a single-department scheme and some reduction in the areas should be possible in a multi-department development.

Engineering services

150. The following engineering services are included in the quoted cost of basic accommodation shown in the Departmental Cost and Area Guide:

(*a*) *Mechanical services:*

Heating	Low pressure hot water radiator system in staff offices, out-patients waiting area and services area. Low pressure hot water radiant ceiling panels in all other areas except those provided with plenum air as described under "ventilation" below.
Ventilation	Plenum filtered warm air supply and mechanical extract from wash-up, preparation and aseptic rooms, autoclave areas and staff lavatories.
Hot and cold water services	From central supply. NOT including calorifiers and storage tanks.
Steam and condensate	From steam main—condensate to main condensate drain.
Gas (fuel) supply	From central supply.
Fire protection	Supply from rising main to hose reel points. Automatic CO_2 drenching to flammable store from bottles adjacent to store.

(*b*) *Electrical services*

Lighting (including fittings), socket outlets, all groups I and IIa equipment wiring, emergency lighting (including fittings), distribution and submains within the department. Clocks, telephones, staff location and fire alarms as extensions of hospital systems, burglar alarms for D.D.A. cupboards.

(*c*) *Equipment*

Tumbler washer, stills, hot air oven, refrigerators, conveyor with bottle rinser, sterilizers, water softener, carboy stand with tipping device, aseptic cabinets, filtering units, fume cupboard and filling head for liquids.

APPENDIX

RECOMMENDED AREAS OF ROOMS

Type of room	*Number of acute beds served* (A)		
	300–550 (B)	Up to 1000	Up to 1200
	Area m.²	*Area* m.²	*Area* m.²
A. Basic accommodation			
(*a*) *Dispensing section*			
(i) Dispensing area	55	74	93.5
(ii) Ante-room or bay	9.5	14	18.5
(iii) Out-patient waiting and service area	18.5	28	37
(iv) Messengers' service area	9.5	9.5	9.5
(*b*) *Manufacturing section*			
(i) Bulk preparation room	37	60.5	60.5
(ii) Laboratory	14	14	18.5
(iii) Wash-up	—	4.5	9.5
(*c*) *Sterile products section*			
(i) Wash-up and space for returned containers	18.5	28	28
(ii) Preparation room	18.5§	28	37
(iii) Autoclave area	14	23	23
(iv) Inspection, labelling and storage	23	32.5	32.5
(v) Aseptic room	9.5	9.5	14
(*d*) *Stores*			
(i) Goods reception			
(a) External goods entrance	—	—	—
(b) Storekeepers' office	7.5	7.5	7.5
(c) Goods receiving store	18.5	18.5	18.5
(d) Returnable empties store	14	14	18.5
(ii) Dressings store*	18.5†	28‡	46.5‡
(iii) Main drug store	28	42	42
(iv) Special security store	9.5	14	14
(v) Container store	14	18.5	18.5
(vi) Flammable store	14	18.5	18.5
(vii) Cool store	7.5	7.5	7.5
(*e*) *Staff*			
(i) Chief Pharmacist's office	11	11	11
(ii) Deputy Chief Pharmacist's office	—	11	11
(iii) Clerk's office	7.5	14	19.5
(iv) Combined technical information and seminar room	9.5	9.5	9.5
(v) Staff lavatories	7.5	11	23
(vi) Porters' room	7.5	7.5	7.5
(vii) Cleaners' room	4.5	4.5	4.5
(*f*) *Switchgear room*	3.5	3.5	3.5
B. Additional accommodation			
(i) Staff room	9.5	14	19
(ii) Cylinder store	14	14	14
C. Circulation			
Circulation space necessary for the above	—	—	—

NOTES (A) The term "acute" should not be interpreted strictly when applied to a district general hospital; instead, the areas should be based on the total number of beds, most of which could be acute.

(B) Where some pharmaceutical services are provided from another hospital all the rooms listed will not be needed.

§ See paragraph 37.

* If most dressings are prepared in the C.S.S.D. the dressing store will be much smaller.

† This assumes about another 42 m.² of storage is readily accessible in the central supplies department.

‡ This assumes about another 55.5 m.² of storage is readily accessible in the central supplies department.

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